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HISTORIC AMERICAN ENGINEERING RECORD

INDEX TO PHOTOGRAPHS

Henry Ford Bridge (Badger Avenue Bridge)
Spanning Cerritos Channel
Los Angeles and Long Beach Harbor
Los Angeles County
California

HAER No.: CA-156

Bruce Eckar, Photographer 3/17/94 (1-18, 26-31, 35-36, 38-39, 41-44, 51, 53-55) 4/13/94 (19-25, 32-34, 37, 40, 45-50, 52)
Unidentified Los Angeles Harbor Department photographers (56-94)

CA-156-1 View of open bridge from Cerritos Channel facing northeast.

CA-156-2 View of partially closed bridge from Cerritos Channel facing northeast.

CA-156-3 View of bridge in the half-closed position from Cerritos Channel facing northeast.

CA-156-4 View of nearly closed bridge from Cerritos Channel facing northeast.

CA-156-5 View of closed bridge from Cerritos Channel facing northeast.

CA-156-6 Aerial view of open bridge from above Cerritos Channel facing northeast.

CA-156-7 Aerial view of partially closed bridge from above Cerritos Channel facing northeast.

CA-156-8 Aerial view of bridge in the half-closed position from above Cerritos Channel facing east.

CA-156-9 Aerial view of bridge with south leaf fully down from above Cerritos Channel facing northeast.

CA-156-10 Aerial view of nearly closed bridge from above Cerritos Channel facing east.

CA-156-11 Aerial view of closed bridge from above Cerritos Channel facing east.

CA-156-12 View of closed bridge looking south towards Terminal Island near water line and railroad track on the east side of the bridge.

CA-156-13 View of partially opened bridge looking south towards Terminal Island near water line and railroad track on the east side of the bridge.

CA-156-14 View of bridge in half-open position looking south towards Terminal Island near water line and railroad track on the east side of the bridge.

CA-156-15 View of open bridge looking south towards Terminal Island near water line and railroad track on the east side of the bridge.

CA-156-16 View of closed bridge looking north into Wilmington.

CA-156-17 View of open bridge looking north into Wilmington.

CA-156-18 View of open bridge facing southeast looking at bridge piers beneath south tower.

CA-156-19 View of dedication plaque on the north tower facing south. The view is oblique because that portion of the approach trestles immediately in front of the plaque was removed in 1979.

CA-156-20 View of the concrete counterweight, north span, western-most counterweight looking north.

CA-156-21 View of southern span showing operating strut extending through the center channel in the concrete counterweight (see also photograph 20).

CA-156-22 Main trunnion bearing, north span, westem-most of three, facing west.

CA-156-23 1st link pin, south span, western-most of two, facing up and west.

CA-156-24 2nd link pin, south span, western-most of two, facing up and north.

CA-156-25 Central tension lock looking straight down, south span is to the left, north span to the right. there are three tension locks just below road level.

CA-156-26 Central compression lock, north span facing north. Compression lock locks two spans together at highest point. There are three compression locks.

CA-156-27 "Frogs" which match up the rail lines on the tower and the movable span as the bridge closes. North span facing south.

CA-156-28 View of the electrical and mechanical rail connections between the two spans. View is from the south span looking north at the north span which is not fully down.

CA-156-29 View of the electrical and mechanical rail connections between the two spans facing north. Both spans are down and locked. These connections are operated from the interlocking machine in the control house (photo 42).

CA-156-30 Closeup view of the electrical and mechanical rail connections between the two spans facing north; interlocking mechanism with controller. Both spans are down and locked.

CA-156-31 Closeup view of the electrical and mechanical rail connections between the two spans facing north; "pins" and electrical connection. Both spans are down and locked.

CA-156-32 Lighted arrows installed on the handrails, one on the south span and one on the north span, used by the bridge operator to visually tell when the both of the spans are down. The walkways are on the western side of the bridge, view is facing southwest.

CA-156-33 Three bolts on railing outside control house on north tower; one bolt on first handrail post of the north span (bridge is in the open position). As the bridge opens or closes the single bolt on the handrail post moves past the three stationary bolts. This system is used by the bridge operator to judge speed and position of the north span as it opens or closes. Based on these bolts movement of the north span is speeded up or slowed down and the brakes applied during the opening and closing process. View facing east.

CA-156-34 Two lights on the western concrete counterweight on the south span. The two lights are used, in conjunction with visible guides on Terminal Island by the bridge operator to judge speed and position of the south span as it opens or closes. Based on the movement of the lights relative to each other and the background the south span is speeded up or slowed down and the brakes applied during the opening and closing process. View facing south.

CA-156-35 View of the control house on the north tower from Cerritos Channel facing northeast.

CA-156-36 View of the control house on the north tower from Cerritos Channel facing north.

CA-156-37 View of the control house on the north tower from the north span facing north. Note mirror and video camera used by bridge operator to check for vessel traffic prior to operating the bridge, loudspeaker and sirens to warn pedestrians and boaters.

CA-156-38 View of the control house on the north tower from the north tower facing west.

CA-156-39 View of bridge operators controls in the control house facing south. Controls on the right are for the south span and on the left for the north span. The large dial indicator towards the top of the picture is a position indicator for the south span. Also present is a marine radio for talking to marine traffic and control ropes for the horn and siren.

CA-156-40 Main fuses and knife switch for power to the bridge, located in the control house. This is one of two located at either end of the main electrical panel (photograph 41). Facing east.

CA-156-41 Main electrical panel, located in the control house. Facing east.

CA-156-42 UPRR interlocking machine in control house (built 1915). Refer to photograph 29. Facing west.

CA-156-43 UPRR status board above the interlocking machine in control house. Facing west.

CA-156-44 Lower half of the hydraulic system used to move the north leaf to allow for thermal expansion of the bridge. Located in the control house. Facing east.

CA-156-45 Upper half of the hydraulic system used to move the north leaf to allow for thermal expansion of the bridge. Located in the control house. Facing east.

CA-156-46 UPRR signal controller box located outside the control house on the north side. Switches on top three shelves, batteries and fuses on the bottom. All made circa 1920. Facing west.

CA-156-47 Detail of switches from UPRR signal controller box. Facing west.

CA-156-48 Detail of batteries in the UPRR signal controller box. Facing west.

CA-156-49 Machinery rooms on north tower. Facing north. Machinery rooms contain all motors, motor controllers, and gears for operating one span, in this case, the north span. Note bell with continuous operating clapper for use as fog signals.

CA-156-50 Machinery rooms on south tower. Facing south. Machinery rooms contain all motors, motor controllers, and gears for operating one span, in this case, the south span.

CA-156-51 Electrical contacts and relays in the south machinery room (interior of both machinery rooms is identical). Facing south.

CA-156-52 Detail of electrical contacts in the south machinery room (interior of both machinery rooms is identical). Facing south.

CA-156-53 Drive shaft, motors, eddie currents, brakes, and differential gears in south machinery room (interior of both machinery rooms is identical). Facing east.

CA-156-54 West emergency brake in the south machinery room (interior of both machinery rooms is identical). Facing west.

CA-156-55 Reduction drive gears in south machinery room (interior of both machinery rooms is identical). Facing west.

Note: photograph 56 is a photocopy of a photograph. The original photograph is located at the Los Angeles Harbor Department's Test Lab located at Berth 161.

CA-156-56 Undated photograph, circa end 1923-beginning 1924 facing southwest from above Long Beach showing Los Angeles/Long Beach Harbors and partially completed bridge.

Note: photographs 57-94 are photocopies of the 1922 Engineering drawings in the possession of the Los Angeles Harbor Department's Engineering Division at 425 S. Palos Verdes Street; San Pedro, CA.

CA-156-57 Original engineering drawings sheet 1: General Drawing.

CA-156-58 Original engineering drawings sheet 2: Stress Sheet.

CA-156-59 Original engineering drawings sheet 3: Masonry Plan.

CA-156-60 Original engineering drawings sheet 4: Strut Between Piers-Expansion End.

CA-156-61 Original engineering drawings sheet 5: Front End Moving Leaf-OS Truss

CA-156-62 Original engineering drawings sheet 6: Trunnion End Moving Leaf-OS Truss.

CA-156-63 Original engineering drawings sheet 7: Front End Moving Leaf-Center Truss.

CA-156-64 Original engineering drawings sheet 8: Trunnion End Moving Leaf-Center Truss.

CA-156-65 Original engineering drawings sheet 9: Portal-Moving Leaf.

CA-156-66 Original engineering drawings sheet 10: Floor Beams and Stringers-Moving Leaf.

CA-156-67 Original engineering drawings sheet 11: Floor Beams and Stringers-Ctwt. Tower.

CA-156-68 Original engineering drawings sheet 12: Rail Castings and Roller Nests.

CA-156-69 Original engineering drawings sheet 13: Lower Part Ctwt. Tower-OS Truss.

CA-156-70 Original engineering drawings sheet 14: Upper Part Ctwt. Tower-OS Truss.

CA-156-71 Original engineering drawings sheet 15: Lower Part Ctwt. Tower-Center Truss.

CA-156-72 Original engineering drawings sheet 16: Upper Part Ctwt. Tower-Center Truss.

CA-156-73 Original engineering drawings sheet 17: Machinery Girders and Machinery Enclosure.

CA-156-74 Original engineering drawings sheet 18: Floor Plan.

CA-156-75 Original engineering drawings sheet 19: Ctwt. Link and Operating Strut.

CA-156-76 Original engineering drawings sheet 20: Outside Ctwt. Truss-Front End.

CA-156-77 Original engineering drawings sheet 21: Outside Ctwt. Truss-Ctwt. End.

CA-156-78 Original engineering drawings sheet 22: Ctwt. Girders-Outside Truss.

CA-156-79 Original engineering drawings sheet 23: Center Ctwt. Truss-Front End.

CA-156-80 Original engineering drawings sheet 24: Center Ctwt. Truss-Ctwt. End.

CA-156-81 Original engineering drawings sheet 25: Ctwt. Girders-Center Truss.

CA-156-82 Original engineering drawings sheet 26: Concrete Counterweight-OS Truss.

CA-156-83 Original engineering drawings sheet 27: Concrete Counterweight-Center Truss.

CA-156-84 Original engineering drawings sheet 28: Stairways and Platforms.

CA-156-85 Original engineering drawings sheet 29: Trunnions and Trunnion Bearings.

CA-156-86 Original engineering drawings sheet 30: Link Pins and Bearings.

CA-156-87 Original engineering drawings sheet 31: Operating Machinery.

CA-156-88 Original engineering drawings sheet 32: Equalizer and Brake Details.

CA-156-89 Original engineering drawings sheet 33: Operating Strut Guide and Rack.

CA-156-90 Original engineering drawings sheet 34: Pump for Tower Expansion.

CA-156-91 Original engineering drawings sheet 35: Compression Lock.

CA-156-92 Original engineering drawings sheet 36: Tension Lock.

CA-156-93 Original engineering drawings sheet 37: Typical Details.

CA-156-94 Original engineering drawings sheet 38: Operators House.